PROPOSED PLAN SITE 36 NSWC INDIAN HEAD MD

04/01/2010

DEPARTMENT OF THE NAVY

Proposed Plan

U.S. Navy Announces the Site 36 Proposed Plan

Naval Support Facility Indian Head

Indian Head, Maryland

Introduction

The purpose of this **Proposed Plan** is to present the preferred alternative for a response action for Site 36, Closed Landfill, at Naval Support Facility Indian Head (NSF-IH), Maryland. This Proposed Plan recommends debris removal, land use controls (LUCs), monitoring, and 5-year reviews to address potential risk at Site 36. This Proposed Plan provides the rationale for this recommendation, based on the investigative activities performed at Site 36, and explains how the public can participate in the decision-making process. The location of the NSF-IH and Site 36 are shown on Figure 1.

The Department of the Navy (Navy) (the lead agency for the site activities) and the U. S. Environmental Protection Agency Region 3 (EPA) (support agency), in consultation with the Maryland Department of the Environment (MDE) (support agency), issue this document as part of the public participation responsibilities under Title 40 of the Code of Federal Regulations (CFR), Section 300.430(f)(2). Title 40 CFR 300 is known as the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)**. This Proposed Plan summarizes information that can be found in detail in the Site Screening Process (SSP) report and other documents contained in the **Administrative Record File** for this site.

The Navy and EPA, in consultation with MDE, will make a final decision on the **response action** for the site after reviewing and considering all information submitted during the 30-day public **comment period** and may modify the preferred response action or select another action, based on any new information or public comments. Therefore, community involvement is critical and the public is encouraged to review and comment on this Proposed Plan. After the public comment period has ended and the comments and information submitted during that time have been reviewed and considered, the Navy and EPA, in consultation with MDE, will document the action selected for the site in a **Record of Decision (ROD)**.

A glossary of specialized terms used in this Proposed Plan is attached. Words included in the glossary are indicated in **bold print** the first time they appear in the plan.

Mark Your Calendar for the Public Comment Period

Public Comment Period
April 12, 2010 through May 12, 2010

Submit Written Comments

The Navy, EPA, and MDE will accept written comments on the Proposed Plan during the public comment period. To submit comments or obtain further information, please refer to the insert page.

Attend the Public Meeting
April 15, 2010 from 6:00pm to 7:00pm

Indian Head Senior Center
100 Cornwallis Square
Indian Head, MD 20640

The Public Comment period will include a public meeting during which the Navy, EPA, and MDE will provide an overview of the site, previous investigation findings, remedial alternatives evaluated, and the Preferred Alternative, answer questions, and accept public comments on the Proposed Plan.

Location of Information Repository

Indian Head Town Hall
4195 Indian Head Hwy.
Indian head, MD 20640
(301) 743-5511
Hours: Monday through Friday
8:30am to 4:30pm

Charles County Public Library
2 Garrett Ave.
LaPlata, MD 20646-5959
(301) 924-9001 and (301) 870-3520
Hours: Monday through Thursday 9am to 8pm
Friday and Sunday 1-5pm
Saturday 9am to 5pm

Naval Support Facility, Indian Head
General Library
Building 620 (The Crossroads)
4163 N. Jackson Road
Indian Head, MD 20640-5117
Hours: Monday through Wednesday
9am to 8pm
Thurs. & Fri. 9am to 5:30pm
Sunday 12 noon to 4pm

Site History

NSF-IH is located in northwestern Charles County, Maryland. It consists of the Main Installation (2,500 acres) on Cornwallis Neck Peninsula and the Stump Neck Annex on Stump Neck Peninsula (Figure 2). NSF-IH was established in 1890 and is the Navy's oldest continuously operating ordnance station. At various times during its operation, NSF-IH has served as a gun and armor proving ground, a powder factory, a propellant plant, and a research facility. Stump Neck Annex which was acquired in 1901 provided a safety buffer for the testing of larger naval guns that were tested by firing into the Potomac River, and at Stump Neck.

The production of gunpowder and development of new explosives during the onset of World War II resulted in the construction of several new facilities at Indian Head, as well as the construction of Route 210 as a Defense Access Road in 1943. Development and improvements at Indian Head continued throughout the 1950s and 1960s, and in 1966, NSF-IH was renamed the Naval Ordnance Station (NOS).

Figure 1: NSF-IH, Indian Head, MD

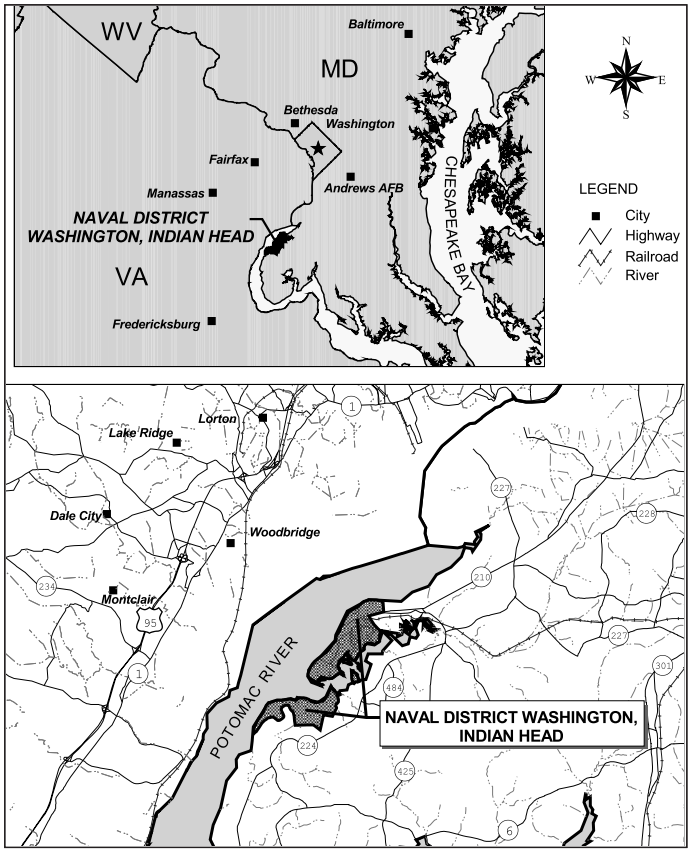

Figure 2: Facility Location Map

After the Vietnam conflict, the mission of NSF-IH shifted from primarily a production facility to a highly technical engineering support operation. In 1987, the NOS was established as a Center for Excellence to promote technological excellence in the following specialized fields: energetic chemicals; guns, rockets and missile propulsion; ordnance devices; explosives; safety and environmental protection; and simulators and training.

Current military land use includes operations and training; production; maintenance and utilities; research, development, testing and evaluation; explosive storage; supply and nonexplosive storage; administration; community facilities and services; housing; and open space.

Site 36 – Closed Landfill is located in the western portion of Stump Neck Annex along Roach Road adjacent to Chickamuxen Creek. The landfill was used from 1972 to 1974 and has been inactive since that time. The filled area was most likely part of Chickamuxen Creek and/or a wetland or marsh adjacent to the creek, and the fill was believed to contain metals casings from mines, bombs, and torpedoes. The contents were reportedly certified inert and did not contain any explosives or chemicals when buried. Wood fragments were also buried in the landfill. Subsequent anecdotal information from personnel who formerly worked in Building 2010, which is located northeast

of the landfill, indicated that disassembled metal parts were disposed in the creek across (west of) Roach Road from Building 2010.

Site Characteristics

Site 36 covers approximately 3 acres in the western portion of the Stump Neck Annex. The site is relatively flat and slopes gradually to the west from Roach Road to Chickamuxen Creek (figure 3). A geophysical survey identified anomalies (i.e., potential buried items) throughout the site area. Soil borings encountered waste (wood fragments mixed with soil) from 4 to 12 feet below ground surface (bgs). The waste layer was overlain by soil fill (gravel, sand, silt, and clay). The borings also encountered river mud and peat below the waste layer. The peat and river mud most likely correspond to former creek sediments present before the area was filled. Surface debris, including tires, empty 55-gallon drums, a large cube-shaped tank, an airplane part, and a large item that appeared to be farm machinery, is present along the Chickamuxen Creek shoreline. The surface of the site is mostly covered with grasses and brushy vegetation, which becomes very dense near the shoreline adjacent to the site. Some small and large trees are present. Shallow groundwater beneath the site is encountered at a depth of approximately 4 feet below the ground surface and flows toward Chickamuxen Creek.

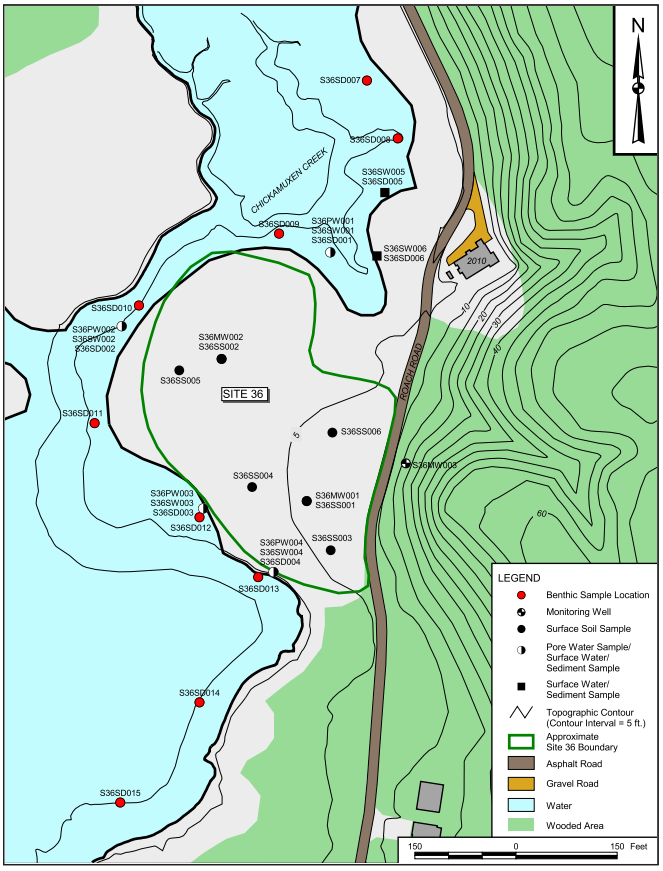

Figure 3: Sample Locations

Several investigations were conducted at Site 36 between 1983 and 2008. Below is a chronological list, including a description of each of these investigations.

Initial Assessment Study

The site was identified as a landfill in the **Initial Assessment Study** (IAS) (Hart, 1983). A site visit during the IAS indicated the presence of metal parts on the surface of the site. The IAS did not contain a recommendation concerning future actions.

Site Screening Investigation

A geophysical survey was conducted during a site screening investigation in 2002 (Tetra Tech, 2003). The survey identified anomalies throughout the area of the suspected landfill identified in the IAS indicating that waste may have been disposed at the site. Surface debris scattered along the shoreline was present. Because of the size of the site and the potential for contamination, additional investigation was recommended.

2003 Site Visit

A site visit was conducted in April 2003 in preparation for an SSP investigation. Materials observed along the shoreline included tires, empty 55-gallon drums, a large cube-shaped tank, a part from an airplane, and a large item that appeared to be a part of a piece of farm machinery.

Site Screening Process

The 2005 SSP investigation was conducted to characterize the nature and extent of contamination at Site 36. The SSP is similar to a Remedial Investigation and evaluates potential risk to human health and the environment resulting from exposure to the site contaminants. The field investigation included installation of three monitoring wells (one upgradient and two within the landfill) and collection of six surface soil, three shallow **groundwater**, six surface water, six sediment, and four sediment pore water samples. Surface soil samples were collected from the surface of the landfill. Surface water, sediment, and sediment pore water samples were collected from Chickamuxen Creek. Sample locations are shown on Figure 2. All samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), explosives, nitrocellulose, nitroglycerin, nitroguanidine, Target Analyte List (TAL) metals, and hexavalent chromium.

Several VOCs, many SVOCs [mostly polynuclear aromatic hydrocarbons (PAHs)], one explosive, and many metals were detected in surface soil. Three VOCs, four SVOCs, three explosives, and several metals were

detected in groundwater. No VOCs, SVOCs, or explosives were detected in the upgradient monitoring well. One VOC, several metals, and cyanide were detected in surface water. Three VOCs, many PAHs, one explosive, several metals, and cyanide were detected in sediment. One VOC, two SVOCs, four explosives, and several metals were detected in sediment pore water.

Based on the results, it was determined additional information on potential ecological risks, particularly to benthic organisms in Chickamuxen Creek, was needed. The field investigation is fully described in the SSP Report (Tetra Tech, 2008.)

Benthic Macroinvertebrate Study

In 2007, a benthic macroinvertebrate study was conducted to evaluate potential ecological risks to benthic organisms in Chickamuxen Creek. Sediment samples were collected from nine locations and submitted for macroinvertebrate analysis. Samples were also analyzed for PAHs, TAL metals, cyanide, acid volatile sulfide (AVS)/simultaneously extracted metals (SEM) (cadmium, copper, lead, nickel, silver, and zinc), total organic carbon, and grain size. The field investigation is fully described in the SSP Report (Tetra Tech, 2008).

Human Health Risk Screening Evaluation

As part of the SSP (Tetra Tech, 2008), screening was conducted to evaluate potential risks to human health. Based on current and anticipated future land use and the location of the site, military personnel, civilian employees, contractors, and trespassers were considered the most likely human receptors. However, to evaluate the site on a conservative basis, risks were only evaluated based on a hypothetical future residential exposure scenario. The risk screening evaluation included a comparison of maximum detected concentrations in soil, groundwater, surface water, sediment, and sediment pore water to United States Environmental Protection Agency (EPA) risk-based screening levels, and estimation of incremental lifetime cancer risks (ILCRs) for carcinogens and **hazard indices** (HIs) for non-carcinogens. The ILCRs and HIs were estimated based on a ratio of the maximum concentration to the risk screening criteria. The results of the risk evaluation are presented in more detail on page 5.

Ecological Risk Screening Evaluation

The SSP also included an ecological risk screening evaluation. The screening evaluation included comparison of detected chemical concentrations to EPA ecological screening levels and alternative guidelines, food-chain modeling, and a benthic macroinvertebrate evaluation. The results of the screening evaluation are presented in more detail on page 5.

Feasibility Study

A **Feasibility Study** (FS) was completed to address potential sources of contamination at Site 36 and to evaluate remedial alternatives to mitigate potential hazards associated with exposure to wastes within the landfill (Tetra Tech, 2009). Five remedial alternatives were evaluated in the FS and are described in detail below.

Principal Threats

There are no principal threats in any of the media at Site 36. Principal threats are explained in the box on page 4.

What is a "Principal Threat"?

The National Contingency Plan establishes an expectation that USEPA will use treatment to address the principal threats posed by a site wherever practicable (National Contingency Plan Section 300.430(a)(1)(iii)(A)). The "principle threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration of contamination to groundwater, surface water, or air, or acts as a source for direct exposure. Contaminated groundwater generally is not considered to be a source material; however, Non-Aqueous Phase Liquids (or NAPLs) in groundwater may be viewed as source material. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of the alternatives using the nine remedy selection criteria. This analysis provides a basis for making a statutory finding that the remedy uses treatment as a principal element.

Scope and Role of the Action

This Proposed Plan addresses the evaluation of the preferred alternative, debris removal, Land Use Controls, monitoring, and 5-year reviews for Site 36 only. The preferred alternative is the final remedy for Site 36. It does not include or directly affect any other sites at the NSF-IH. The purpose of this plan is to summarize activities performed to date to investigate Site 36 and provide a rationale for the proposed response action for soil, surface water, sediment, and groundwater.

Summary of Site Risks

This section summarizes the results of the risk evaluation conducted for Site 36. The risk assessment evaluates the potential for chemicals at a site to have an adverse effect on human and ecological **receptors** if no action is taken to clean up the site. A detailed discussion of risks at Site 36 and the risk evaluation process can be found in the SSP (Tetra Tech, 2008).

Human Health Risks

As part of the SSP completed in 2008, risks to human health were evaluated. For an explanation of the HHRA process, see the text box on page 6.

The estimated total ILCR for the future resident is $7.6X10^{-4}$, which is greater than the EPA acceptable risk range of $1X10^{-4}$ to $1X10^{-6}$. The risks were calculated for the Reasonable Maximum Exposure scenario. The ILCR for each medium is:

- There are no unacceptable carcinogenic risks from exposure to surface soil or surface water.
- The estimated ILCR for exposure to shallow groundwater is $5.2X10^{-4.}$ The primary risk driver is arsenic.
- The estimated ILCR for exposure to sediment pore water is $1.1X10^{-4}$, which is slightly greater than the EPA acceptable risk range. The primary risk driver is arsenic. The evaluation conservatively assumed that sediment pore water would be used as a source of drinking water. However, this assumption is very conservative, and the risk estimate is considered to be biased high. Although sediment pore water could be considered as shallow groundwater that is discharging into Chickamuxen Creek, it is highly unlikely that a water supply well would be installed in the creek.
- The estimated ILCR for exposure to sediment is $1.1X10^{-4}$, which is slightly greater than the EPA acceptable risk range. The primary risk drivers are benzo(a)pyrene, benzo(b)fluoranthene, and arsenic. The evaluation conservatively assumed that exposure to sediment would be the same as exposure to surface soil under a residential land use scenario (350 days/year). However, this assumption is very conservative, and the risk estimate is considered to be biased high because exposure to sediment under a realistic residential exposure scenario would be much less frequent. If exposure to sediment was half the assumed exposure to soil, the ILCR would be within the acceptable risk range. Also, the risk screening levels for soil are based on the ingestion and inhalation routes of exposure, which is a reasonable assumption; however, exposure to sediment under a more realistic assumption would primarily be associated with dermal contact. There are no screening levels for dermal exposure.

The estimated total cumulative HI is 21, which is greater than the EPA threshold of 1.0. There are no unacceptable non-carcinogenic risks for exposure to surface soil and surface water. HIs are greater than 1.0 for shallow groundwater (7.7), sediment pore water (8.0), and sediment (4.6). Risk drivers for shallow groundwater are arsenic (HI = 2.0), iron (HI = 2.6), and manganese (HI = 2.1). Risk drivers for pore water are iron (HI = 3.2) and manganese (HI = 3.7), and the only risk driver for sediment is iron (HI = 1.7). The non-carcinogenic risk estimates for exposure to sediment pore water and sediment are considered to be biased high due to the limited potential for exposure as stated above.

The human health risk screening evaluation also concluded that migration of chemicals detected in soil to shallow groundwater is not considered to be problematic.

In summary, the only potential risk in excess of acceptable levels to human health associated with exposure to chemicals is from exposure to shallow groundwater under a residential exposure scenario. COCs include arsenic, iron, and manganese. There is also an inherent risk from exposure to buried landfill waste.

Ecological Risks

There are no unacceptable risks to ecological receptors. Potential risks to plants and invertebrates from chemicals detected in surface soil are acceptable. Based on comparisons to ecological screening levels, there are potential risks to aquatic organisms from exposure to surface water and potential risks to sediment invertebrates from exposure to sediment and sediment pore water. However to further evaluate site-

specific ecological risks, a macroinvertebrate survey was conducted. The results of this survey indicated that the benthic community is not being adversely affected by either surface water or sediment contamination. Also, metals detected in sediment should not be bioavailable based on AVS / SEM results. Results from food-chain modeling indicate that potential risks to terrestrial wildlife are acceptable.

Remedial Action Objectives

Based on the potential pathways, receptors of concern, and current and potential future land use scenarios, the **Remedial Action Objectives (RAO)** for Site 36 are:

- Protect human health and the environment from direct exposure to contaminant sources at the landfill and from exposure to contaminants migrating from the landfill via surface water runoff and erosion, infiltration to groundwater and groundwater migration, or wind erosion and dust migration.
- Prevent human exposure to contaminants in site groundwater.

Summary of Remedial Alternatives

In the FS, several alternatives that would satisfy the RAO were developed that address risks from exposure to landfill waste. There are no unacceptable risks to human health and the environment from exposure to surface soil, surface water, sediment, or sediment pore water. There are inherent risks and safety concerns from exposure to landfill waste. Risks to human health are also associated with exposure to metals (i.e., arsenic, iron, and manganese) in shallow groundwater used as a source of drinking water under a hypothetical future residential exposure scenario.

Five remedial alternatives were developed, as summarized below.

Alternative 1 – No Action

This alternative is included to serve as a baseline against which other alternatives are compared. In this alternative, no remediation or action is planned. However, five-year reviews are required because waste and contaminants would be left in place at concentrations exceeding those suitable for unlimited use and unrestricted exposure.

What is Human Health Risk and how is it calculated?

A human health risk assessment estimates the baseline risk, an estimate of the likelihood of health problems occurring if no cleanup action is taken at a site. To estimate the baseline risk at a site, the Navy performs the following four-step process:

Step 1: Analyze Contamination
Step 2: Estimate Exposure
Step 3: Assess Potential Health Dangers
Step 4: Characterize Site Risk

In Step 1, the Navy looks at the concentrations of contaminants found at a site as well as past scientific studies describing the effects these contaminants have had on people (or animals, when human studies are unavailable). Comparisons between site-specific concentrations and concentrations reported in past studies help the Navy to determine which contaminants are most likely to pose threats to human health.

In Step 2, the Navy considers the different ways that people might be exposed to the contaminants identified in Step 1, the concentrations that people might be exposed to, and the potential frequency (how often) and length of exposure. Using this information, the Navy calculates a "reasonable maximum exposure" (RME) scenario that portrays the highest level of human exposure that could reasonably be expected to occur.

In Step 3, the Navy uses the information from Step 2 combined with information on the toxicity of each chemical to assess potential health risks. The Navy considers two types of risk: (1) cancer risk and (2) noncancer risk. The likelihood of any kind of cancer resulting from a contaminated site is generally expressed as an upper bound probability; for example, a "1 in 10,000 chance." In other words, for every 10,000 people who could be exposed, one extra cancer may occur as a result of exposure to site contaminants. An extra cancer case means that one more person could get cancer than normally would be expected from all other causes. For noncancer health effects, the Navy calculates a "hazard index." The key concept here is that a "threshold level" (measured usually as a hazard index of less than 1) exists below which noncancer health effects are no longer predicted.

In Step 4, the Navy determines whether site risks are great enough to cause health problems for people at or near the site. The results of the three previous steps are combined, evaluated, and summarized. The Navy adds up the potential risks from the individual contaminants and exposure pathways and calculates a total site risk.

Alternative 1 - Estimated Cost	
Capital Cost	$0
Lifetime O&M Cost	$118,800
Lifetime Present Worth O&M Cost	$42,700
Total Present-Worth Cost	$42,700
Projected Time Frame to Achieve RAOs	NA

Alternative 2 – Land Use Controls

This alternative would include debris removal, LUCs, monitoring, and 5-year reviews. LUCs would include land and groundwater use restrictions to prevent unauthorized excavation, residential development, and use of shallow groundwater. Groundwater monitoring would be conducted to confirm that contaminants are not migrating from the site at unacceptable levels or in excess of Maximum Contaminant Levels (MCLs). Five-year reviews are required because waste and contaminants would be left in place at concentrations exceeding those suitable for unlimited use and unrestricted exposure. Alternative 2 would not conform to state landfill closure design requirements but would qualify for a variance. A variance to the design requirements is allowable as the existing soil cover conserves and protects the public health, natural resources, and environment and controls air, water, and land pollution to the same extent as would be obtained by an engineered cover.

Alternative 2 - Estimated Cost	
Capital Cost	$91,000
Lifetime O&M Cost	$661,000
Lifetime Present Worth O&M Cost	$267,000
Total Present-Worth Cost	$358,000
Projected Time Frame to Achieve RAOs	1 month

Alternative 3 – Soil Cover and Land Use Controls

This alternative would include debris removal, a soil cover, LUCs, monitoring, and 5-year reviews. Existing vegetation would be removed, a 2-foot-thick soil cover would be placed over the landfill, and the site would be revegetated. This alternative would include the same LUCs, groundwater monitoring, and 5-year reviews described for Alternative 2. Alternative 3 would not conform to state landfill closure design requirements but would qualify for a variance as described in Alternative 2, above.

Alternative 3 - Estimated Cost	
Capital Cost (Years 0 and 3)	$1,094,000
Lifetime O&M Cost	$661,000
Lifetime Present Worth O&M Cost	$267,000
Total Present-Worth Cost	$1,361,000
Projected Time Frame to Achieve RAOs	2 months

Alternative 4 – Engineered Cap and Land Use Controls

This alternative would include debris removal, an engineered cap, LUCs, monitoring, and 5-year reviews. Existing vegetation would be removed, an impermeable multi-layer cap would be installed, and the capped area would be revegetated. Existing vegetation would not be replaced because the site would need to be revegetated with plants that would not penetrate the cap. This alternative would include the same LUCs, groundwater monitoring, and 5-year reviews described for Alternative 2. Alternative 4 would conform to state landfill closure design requirements.

Alternative 4 - Estimated Cost	
Capital Cost (Years 0 and 3)	$2,887,000
Lifetime O&M Cost	$661,000
Lifetime Present Worth O&M Cost	$267,000
Total Present-Worth Cost	$3,154,000
Projected Time Frame to Achieve RAOs	4 months

Alternative 5 – Landfill Removal

This alternative includes removal of the entire landfill. The excavated material would be dewatered, as necessary, screened for potential ordnance items, and transported off site for disposal. The excavated area would not be backfilled but would be allowed to revert to open water in Chickamuxen Creek or converted to a wetland. LUCs, monitoring, and 5-year reviews would not be required.

Alternative 5 - Estimated Cost	
Capital Cost (Years 0 and 3)	$18,952,000
Lifetime O&M Cost	$0
Lifetime Present Worth O&M Cost	$0
Total Present-Worth Cost	$18,952,000
Projected Time Frame to Achieve RAOs	16 months

Evaluation of Remedial Alternatives

The NCP outlines the approach for comparing remedial alternatives. Remedial alternatives are evaluated using **nine evaluation criteria** to facilitate a comparison of the relative performance of the alternatives and provide a means to identify their advantages and disadvantages. The nine criteria are:

1 Overall protection of human health and the environment

2 Compliance with **Applicable or Relevant and Appropriate Requirements (ARARs)**

3 Long-term effectiveness and permanence

4 Reduction of toxicity, mobility, and volume

5 Short-term effectiveness

6 Implementability

7 Cost

8 State acceptance

9 Community acceptance

The FS provides a detailed analysis and evaluation of the remedial alternatives based on criteria 1 through 7. Criteria 8 and 9 will be evaluated after receipt of the public's comments on this Proposed Plan during the 30-day comment period. A discussion of how each alternative satisfies each criterion and how it compares to the other alternatives is provided below and summarized in Table 1.

Overall Protection of Human Health and the Environment

All of the alternatives, except Alternative 1, would provide adequate protection of human health, with Alternative 5 providing the greatest protection. Alternatives 2, 3, and 4 would require the implementation of LUCs that would restrict land and groundwater use to ensure protection of human health and the environment. Since Alternative 1 fails this threshold criterion, it will not be considered further in this analysis.

Compliance with ARARs

The primary ARAR applicable to Alternative 2, 3, and 4 is the State of Maryland landfill closure requirement at COMAR Section 26.04.07.21. Only Alternative 4 would comply with this ARAR. However, the requirements of this section can be satisfied by a closure alternative that provides at least the same degree of protection of human health and the environment as would be afforded by compliance with the regulation, according to the variance provision at COMAR 26.04.07.26.

Long-Term Effectiveness and Performance

Alternative 5 would be the most protective over the long term because the landfill waste would be removed from the site. LUCs and long-term monitoring would not be required. Alternatives 2, 3, and 4 would be less effective in the long term because the landfill waste would remain on site, and LUCs would be needed to restrict land and groundwater use. Monitoring included under Alternatives 2, 3, and 4 would effectively help in confirming the effectiveness of these alternatives, determining whether contaminants are migrating off site at unacceptable levels, and evaluating whether future action is required.

Site 36 Looking East Toward Abandoned Tank

There would be no adverse impacts to the environment from implementation of Alternative 2. Implementation of Alternatives 3, 4, and 5 would require that all existing vegetation be removed from the site. For Alternatives 3 and 4, this would destroy the existing ecological habitat until the vegetation planted on the soil cover or engineering cap becomes established. Following implementation of Alternative 5, the existing terrestrial habitat would revert to open water in Chickamuxen Creek or would be converted to a wetland.

Reduction of Toxicity, Mobility, and Volume through Treatment

None of the alternatives considered employ any treatment components. Therefore, none of the alternatives satisfy this Criterion.

Short-Term Effectiveness

There would be no adverse impact on the community from implementation of Alternatives 2,3, and 4. For Alternative 5, hauling wastes off site would generate additional traffic. Although there would be a potential for spills during transport, all materials would be solids that could easily be placed back into the transport container.

Implementation of Alternatives 3, 4, and 5 could have short-term impacts on Chickamuxen Creek and associated wetlands. Erosion controls would be provided during earth-moving activities to prevent migration of soil to the creek. Any wetlands that are adversely affected during implementation would be replaced. Any dust that is generated could be adequately controlled.

Implementability

Alternatives 2, 3, and 4 are readily implementable. Equipment and services necessary to remove debris from the shoreline, construct a soil cover, and construct an engineered cap are readily available. Land and groundwater use restrictions could be strictly enforced because the site is located at a military facility.

Alternative 5 would be more difficult to implement due to the need to excavate waste below the water table and dewater the excavated materials.

Cost

Alternative 2 would be the least costly alternative that is protective of human health and the environment, followed by Alternatives 3, 4 and finally, Alternative 5, which would be much more costly than any of the other alternatives.

Preferred Remedial Alternative

The Navy and EPA, in consultation with MDE, are proposing Alternative 2, Debris Removal, Land Use Controls, Monitoring, and Five-Year Reviews as the preferred alternative at Site 36. Based on the results of investigations conducted, the Navy, EPA, and the MDE have determined that this alternative is expected to be protective of human health and the environment by implementing land and groundwater use restrictions and monitoring. This alternative requires a variance from state landfill closure requirements. A detailed list of ARARs can be found in Section 2.4 of the FS.

Alternative 2 – Debris Removal, Land Use Controls, Monitoring and Five-Year Reviews

The components of this alternative include the following:

- Removal and recycling of large pieces of metal debris along the shoreline.
- Implementing land and groundwater use restrictions. LUCs would include land and groundwater use restrictions to prevent unauthorized excavation, residential development, and use of shallow groundwater.
- Performing long-term monitoring of shallow groundwater and surface water to confirm that groundwater contaminant migration is not occurring at unacceptable levels or in excess of MCLs.
- Conducting 5-year reviews.

Criteria	Alternative Number				
	1	2	3	4	5
Overall Protectiveness of Human Health and the Environment	×	•	•	•	•
Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)	×	o	o	•	•
Long-Term Effectiveness and Permanence	×	•	•	•	•
Reduction of Toxicity, Mobility, or Volume Through Treatment	×	×	×	×	×
Short-Term Effectiveness	×	•	o	o	×
Implementability	•	•	•	•	o
Cost	$42,700	$358,000	$1,361,000	$3,154,000	$18,952,000
State/Support Agency Acceptance	x	TBD	TBD	TBD	TBD
Community Acceptance	TBD	TBD	TBD	TBD	TBD

Legend: • – Satisfies criterion
o – Partially satisfies criterion
× - Poorly satisfies criterion
TBD – To Be Determined

Community Participation

The Navy and EPA provide information regarding the cleanup of the NSF-IH to the public through public meetings, the Administrative Record file for the site, the **information repository**, and announcements published in the newspaper. The Navy and EPA encourage the public to gain a more comprehensive understanding of the site and the **CERCLA** activities that have been conducted at the site.

The 30-day public comment period runs from April 1, 2010 through April 30, 2010. The public meeting will be held on April 15, 2010, from 6:00 P.M. to 7:00 P.M. at the Senior Center, 100 Cornwallis Square, Indian Head, Maryland [301-744-4627]. The location of the Administrative Record and Information Repository are also provided on page 1 of this Proposed Plan.

Minutes of the public meeting will be included in the Administrative Record file. All comments received during the public meeting and comment period will be summarized, and responses will be provided in the **Responsiveness Summary** section of the ROD. The ROD is the document that will present the selected remedy and will be included in the Administrative Record file.

Written comments can be submitted via mail, e-mail, or fax, and should be sent to the following addressee:

Public Affairs Officer
Naval Support Facility South Potomac
Attn: Public Affairs Officer, Code 00P
6509 Sampson Rd.
Dahlgren, VA 22448-5108
(540) 653-1475
FAX: 540 653-6148
Email: gary.wagner@navy.mil

For further information, please contact:

Mr. Nathan Delong, Remedial Project Manager
Naval Facilities Engineering Command Washington
1314 Harwood St. SE
Washington Navy Yard, DC 20374-5018
Phone: 202-685-3279
FAX: 202-433-6193
Email: nathan.delong@navy.mil

Mr. Nicholas Carros, Installation Restoration Project Manager
Naval Support Facility, Indian Head
Environmental Program Office (Building 554)
3972 Ward Road, Suite 101
Indian Head, MD 20640-5157
Phone: 301-744-2263
Fax: 301-744-4180
Email: nicholas.carros@navy.mil

Mr. Dennis Orenshaw, Remedial Project Manager
U.S. Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, PA 19103-2029
Phone: 215-814-3361
FAX: 215-814-3051
Email: orenshaw.dennis@epa.gov

Mr. Curtis DeTore, Remedial Project Manager
Maryland Department of the Environment
1800 Washington Blvd., Suite 645
Baltimore, MD 21230-1719
Phone: 410-537-3791
FAX: 410-537-3472
Email: cdetore@mde.state.md.us

References

Fred C. Hart Associates, Inc. 1983. *Initial Assessment Study of Naval Ordnance Station, Indian Head, Maryland.*

Tetra Tech, 2003. *Site Screening Process Report for Site 32 – Suspected Tool Burial Area, Site 33 – Scrap Metal Pit, Site 34 – Tool Burial, Site 36 – Closed Landfill, Site 37 – Causeway, Site 51 – Building 101 Dry Well, and Site 52 – Building 102 Dry Well, Indian Head Division, Naval Surface Warfare Center, Indian Head, Maryland. Prepared for Engineering Field Activity Chesapeake, Naval Facilities Engineering Command, Washington Navy Yard, D.C. King of Prussia, Pennsylvania.*

Tetra Tech, 2008. *Site Screening Process Report, Site 36 – Closed Landfill, Naval Support Facility, Indian Head, Maryland. Prepared for Naval Facilities Engineering Command Washington, Washington Navy Yard, D.C. King of Prussia, Pennsylvania.*

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Glossary of Terms

Administrative Record File: A record made available to the public that includes all information considered and relied upon in selecting a remedy for a site.

Applicable or Relevant and Appropriate Requirements (ARARs): The federal and state environmental laws that a selected remedy will meet.

These requirements may vary among sites.

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act (1980), also known as the **Superfund** Law, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). CERCLA provides the authority and procedures for responding to releases of hazardous substances, pollutants, and contaminants from inactive hazardous waste disposal sites.

Comment Period: A time for the public to review and comment on various documents and actions taken, either by the Navy, EPA, or MDE. A minimum 30-day comment period is held to allow community members to review the Administrative Record file and review and comment on the Proposed Plan.

Feasibility Study (FS): A document that identifies the site cleanup criteria, identifies the different approaches that may be used to clean up the site, and evaluates these cleanup approaches.

Groundwater: Water beneath the ground surface that fills pore spaces between materials such as sand, soil, or gravel to the point of saturation. In aquifers, groundwater occurs in quantities sufficient for drinking water, irrigation, and other uses. Groundwater may transport substances that have percolated downward from the ground surface as it flows towards its point of discharge.

Hazard Index (HI): The ratio of the daily intake of chemicals from onsite exposure divided by the reference dose for those chemicals. The reference dose represents the daily intake of a chemical not expected to cause adverse health effects.

Information Repository: A file containing information, technical reports, reference documents, and the Administrative Record regarding a National Priorities List site. This file is usually maintained in a place with easy public access, such as a public library. However, for security reasons following September 11, 2001, files are now maintained at NSF-IH in Building 620.

Initial Assessment Study (IAS): The first of two phases of environmental investigation under the Navy Assessment and Control of Installation Pollutants program. The IAS is a preliminary evaluation of a facility that (1) identifies areas potentially contaminated by previous handling, storage, and disposal of hazardous substances; (2) assesses the potential effects of the contamination on human health and animals; and (3) recommends remedial measures appropriate for the contaminated areas. The second phase of the program, the Confirmation Study, is performed if further action is required.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): The purpose of the NCP is to provide the organizational structure and procedures for preparing for, and responding to, discharges of oil and releases of hazardous substances, pollutants, or contaminants.

Proposed Plan: A public participation requirement of the Superfund Amendments and Reauthorization Act of 1986 (SARA) in which the lead government agency (in this case, the Navy) summarizes the preferred cleanup strategy and rationale for the public. This agency also reviews the alternatives presented in the detailed analysis of the **Feasibility Study (FS)** or EE/CA. The Proposed Plan may be prepared either as a fact sheet or as a separate document. In either case, it must actively solicit public review and comment on all alternatives under consideration.

Receptor: An individual, either a human, plant or animal, which may be exposed to a chemical present at the site.

Record of Decision (ROD): An official public document that sets forward the Navy's final remedy for a site. The ROD is based on information and technical analysis generated during the RI and FS or EE/CA and consideration of public comments and community concerns. The ROD explains the remedy selection process and is issued by the Navy following the public comment period.

Response Action: As defined by Section 101(25) of CERCLA. Response Action means remove, removal, remedy, or response action, including related enforcement activities.

Responsiveness Summary: A summary of oral and written public comments received by the lead agency during a comment period and the responses to these comments, prepared by the lead agency. The Responsiveness Summary is an important part of the ROD, highlighting community concerns for decision makers.

Risk-Based Concentration (RBC): Conservative screening chemical-specific values that are protective of human health, used to identify contaminants of potential concern.

Superfund: The program operated under the legislative authority of CERCLA and SARA that funds and carries out EPA hazardous waste emergency and long-term removal and remedial activities. These activities include establishing the National Priorities List, investigating sites for inclusion on the list, determining their priority, and conducting and/or supervising the cleanup and other remedial actions.

Please print or type your comments for site 36 here

Mark Your Calendar for the Public Comment Period

Public Comment Period
April 12, 2010 through May 12, 2010
Submit Written Comments

Written comments must be postmarked no later than the last day of the public comment period, which is May 12, 2010. Based on the public comments or on any new information obtained, the Navy may modify the Preferred Alternative. The insert page of this proposed Plan may be used to provide comments, although the use of the form is not required. If the form is used to submit comments, please fold page, seal, add postage where indicated, and mail to addressee as provided.

Attend the Public Meeting
April 15, 2010 from 6:00pm to 7:00pm

Indian Head Senior Center
100 Cornwallis Square
Indian Head, MD 20640

The Public Comment period will include a public meeting during which the Navy, EPA, and MDE will provide an overview of the site, previous investigation findings, remedial alternatives evaluated, and the Preferred Alternative, answer questions, and accept public comments on the Proposed Plan.

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Public Affairs Officer
Naval Support Facility South Potomac
Attn: Public Affairs officer, Code 00P
6509 Sampson road
Dahlgren, VA 22448-5108
(540) 653-1475